



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

647.1611E
Job Sheet 181380



DAS
61
9-89

Part No: 647.1611E

Job Qty: 250 ea

DAS
13
9-89

Part Name: Wiper Deflector



AUG 16 2018

Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 7/26/18

Job Tracking No:

Due Date: 9/10/18

Created By: Marie Lajeunesse

Type: Stock

Description:

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
100	Purchasing	250 pcs		9/10/18	0.00	0.00	Purchasing		AT 1402/10
110	Packaging	250 pcs		9/10/18	0.00	0.00	Packaging2		AT 1402/10
120	QC	250 pcs		9/10/18	0.00	0.00	QC6		DAS 61
130	Packaging	250 pcs		9/10/18	0.00	0.00	Packaging3-1		21 9-89 JAN 14 2018
140	QC21-SA	250 Ea		9/10/18	0.00	0.00	QC21		21 9-89 JAN 14 2018

Part Op 110 - Receive & Inspect for Damage & Mat'l Certs
Descriptions: 120 - QC6- All purchased or subcontracted products
130 - Identify as per dwg & Stock Location: _____
140 - QC21- Final Inspection - Work Order Release

P10: 040757
AUG 16 2018
DAS 13 9-89

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
647.1611P	Wiper Deflector	250 ft (1 ea)	100-Purchasing	5143849

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
100-Purchasing	647.1611P	250	0	0

Part Specifications

Specifications could not be found.

Plex 7/26/18 7:52 AM Dart.lajeunesse.marie

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

APICAL INDUSTRIES, INC.	ENGINEERING CHANGE NOTICE NO. 04229				SHEET 1 OF 1	
	DWG NO. 647.1600	REV: A	PREPARED BY J. SOTO	DATE: 11/11/2013	EFFECT ON DWG ☐ INC. ☒ UNINC.	
	DWG TITLE: WIPER DEFLECTOR ASSY					
	APPROVED BY:	ENGR <i>[Signature]</i>	MFG <i>David Barber</i>	QC <i>[Signature]</i>	EFF. NEXT ORDER	
TRANSACTION CODES (TC): A-ADD R-REVISE C-CREATE D-DELETE	REASON: REVISED F/N 8					ECR: 13-032

8	R	601.2207	8		NUTPLATE RIVET	CCR265SS3-3	
F/N	TC	PART NUMBER	.1602	.1601	DESCRIPTION	MATERIAL	SPECIFICATION
			QTY				
DOCUMENTS EFFECTED:						CHANGE CATEGORY	DER REVIEW REQUIRED
☐ MDL ☐ INSTALL INSTRUCTIONS ☐ ICA ☐ FMS ☒ BOM						☐ MAJOR ☒ MINOR	☐ YES ☒ NO

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

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Root Cause				FAULT CATEGORY			
Environment	☐	No Re-verification	☐	Pressure/Forced	☐	Temperature/Cure	☐
Design	☐	Operator	☐	Bending	☐	Set-up	☐
Doc/Data	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐
Equip/Tooling	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐
Handling/Pre	☐	Training	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐
Material	☐	Use for Testing	☐	Cuffs	☐	Contamination	☐
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Past Expiry Date	☐	Manufacturing Process	☐	OTHER : _____			
Misidentified	☐	Past Due	☐				

1 2 3 4 5 6 7 8

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APICAL INDUSTRIES. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED.

647.1611

647.1600

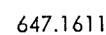
WIPER DEFLECTOR ASSY

2608 TEMPLE HEIGHTS DR.
OCEANSIDE, CA. 92056-3512 (760)724-5121

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
2 PLACE DECIMALS ± .01
3 PLACE DECIMALS ± .005
ANGLES ± 5°

SCALE: NONE

SHEET 3 OF 3



OFFICIAL DATE 14-04-2011 06:10:29 DRAWN BY 1 CROCHER 1 GARDNER P RAYO DRAWING APPROVAL P. RAYO CONTRACT NO	APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA 92056-3512 (760) 774-5300		
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES 1. ALL DIMENSIONS ARE 2. PLACE DECIMALS 2 1/2 3. PLACE DECIMALS 3.000 4. ANGLES 30°	WIPER DEFLECTOR ASSEMBLY		
S/L E SCALE NONE	CAGE CODE 07W16	DWG NO 647.1600	REV A
		SHEET	3 OF 6

DQA: _____ Date: _____



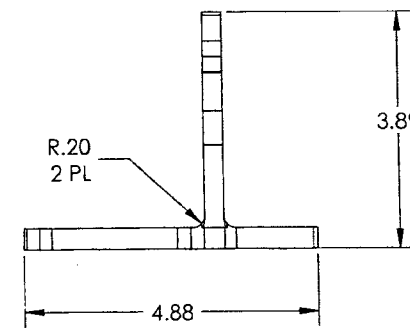
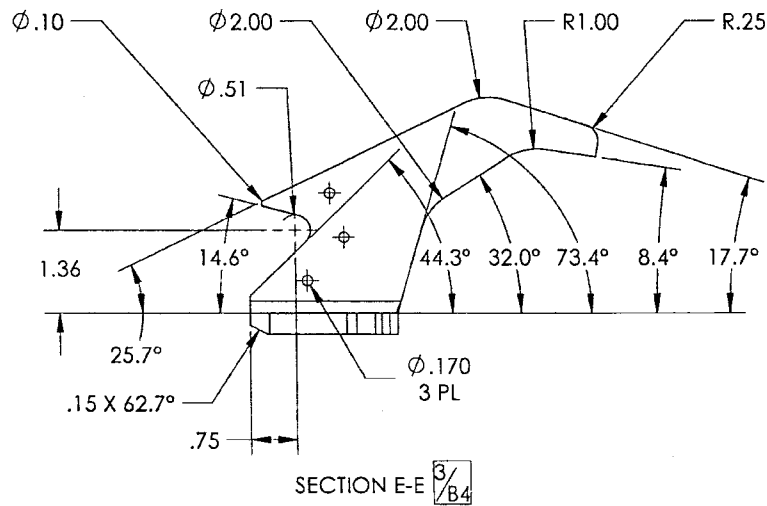
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QA Closed: _____ Date: _____

Work Order update only ☐

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Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

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5.04

ORIGINAL DATE		APICAL INDUSTRIES	
INVOICE #	CHK NO	2608 TEMPLE HEIGHTS DR.	
DRAWN BY	CHECKED	OCEANSIDE, CA. 92056-3512 (760)724-5300	
J. GARDNER	P. BRAVO	WIPER DEFLECTOR ASSY	
DRAWING APPROVAL			
P. BRAVO			
CONTRACTING			
UNLESS OTHERWISE SPECIFIED		SHEET	REV
DIMENSIONS ARE IN INCHES		B	A
TOLERANCES ARE		DWG NO.	
2 PLACE DECIMALS ± .01		647.1600	
3 PLACE DECIMALS ± .005		SCALE	NONE
ANGLES ± .5°		SHEET 4 OF 6	

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

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Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER PO040757

Supplier: UNA001-VU
Universal Alloy Corporation
2871 La Mesa P.O. Box 6316
Anaheim, CA 92816-8316 USA
Phone: 714-630-7200
Fax: 714-630-7207

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

PO No: PO040757

PO Date: 8/16/18

Due Date: 12/19/18

Purchase Order

Revision:

Revision Date:

Ship-To Contact: Lavoie, Chantal
clavoie@dartaero.com

Via: Ground

Pymt Terms: COD

Freight Terms:

Special Comments: QUOTE # 402756

E-MAILED
AUG 16 2018

Items

Line Item	Job	Part	Supplier Part No	Item No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price
1	181380	647.1611P			Wiper Deflector AS PER DWG 647.1600 REV. A	Firmed	-	12/19/18	252 ft	0 ft	252 ft	\$27.37/ft	\$6,897.24

264 ft AT 19/01/10

Line Item Note EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS MUST BE WELL PACKAGE, IF NOT IT WILL BE REFUSE

Grand Total: \$6,897.24

Order Notes

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Procurement Quality Clauses

A005 RIGHT OF ENTRY

A007 FIRST ARTICLE INSPECTION (FAI) BY SELLER, (DOCUMENTATION MAINTAINED BY SUPPLIER)

A012 CHEMICAL AND PHYSICAL TEST REPORTS

A016 PERSONNEL QUALIFICATION

A017 RAW MATERIAL IDENTIFICATION (AS APPLICABLE)

A026 CERTIFICATION OF MATERIAL CONFORMANCE

A041 QUALITY MANAGEMENT SYSTEM

A042 DART NOTIFICATION BY SUPPLIER

A043 RETENTION OF QUALITY DOCUMENT

A048 COUNTERFEIT PARTS AVOIDANCE, DETECTION, MITIGATION AND DISPOSITION PROGRAM

A049 SUPPLIER AWARENESS

Plex 8/16/18 7:51 AM dart.lavoie.chantal

Shipper No. 547063-1	DIE NO. 15P1671
--------------------------------	--------------------

UNIVERSAL ALLOY CORPORATION
 2871 John Ball Way., P.O. BOX 6316, ANAHEIM, CA 92816-6316
 (714) 630-7200 (800) 331-7772 FAX (714) 630-7207

PRODUCTION LOTS	C805648 @22 PCS
-----------------	------------------------

S H DART AEROSPACE I 1270 ABERDEEN P T HAWKESBURY, ONTARIO, CN K6A 1K7 O	S O DART AEROSPACE L 1270 ABERDEEN D T HAWKESBURY, ONTARIO, CN K6A 1K7 O	1/32
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CUSTOMER'S P.O. NO. PO040757 item 1		ORDER PLACED BY CHANTAL LAVOIE	CUSTOMER'S PART NUMBER 647.1611-EXT 647.1611P
TERMS NET 60	ALLOY 7075-T6	SPECIFICATION NO. AMS-QQ-A-200/11 REV. A	
SHIP VIA	DATE SHIPPED 12/21/2018	FREIGHT CHARGES PREPAID ☐ COLLECT ☒	SHIPMENT PARTIAL ☐ COMPLETE ☒
		CERTIFICATIONS ATTACHED ☒ TO FOLLOW ☐	

QUANTITY SHIPPED				
FEET 264	PIECES X LENGTH 22 X 144.000	NET POUNDS 957	GROSS POUNDS 1097	BOX 4 bundles of 4 boxes
RECEIVED BY X		DATE	TIME	

UNIVERSAL ALLOY CORPORATION ACCEPTS NO RESPONSIBILITY FOR ERROR IN SHIPMENT IF YOU FAIL TO NOTIFY US WITHIN 3 DAYS OF RECEIPT. NO REJECTED MATERIAL WILL BE ACCEPTED FOR CREDIT OR REPLACEMENT AFTER 30 DAYS FROM DATE OF RECEIPT.



EXTRUSION MILL CERTIFICATE OF CONFORMANCE

Inspection & Test Report

Page 1 / 1

Customer	DART AEROSPACE LTD, 1270 ABERDEEN		
Certificate Date	12/13/2018	Purchase Order	PO040757 / 1
Material	7075	Order Number	547063
Temper	T6	Part Number	647.1611-EXT Rev. N/C / 647.1611P
Specification(s)	AMS-QQ-A-200/11 REV. A		

Chemical Composition Limits		Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti				Others	
													Each	Total
*Remainder aluminium	Min	0.0	0.0	1.20	0.0	2.10	0.18	5.10	0.0					
	Max	0.40	0.50	2.00	0.30	2.90	0.28	6.10	0.20				0.05	0.15

Tensile Test Results				UTS	TYS	Elongation	
Lot No.	Temper	Orient.	Location	ksi	ksi	%	
C805648	T6	L	Rear	88.9	78.6	12.4	

Additional Information

This is to certify that material applied to the above order covered by this test report has been inspected in accordance with the specifications and drawing forming a part of this order and complies with the contract. Representative material has been tested and found to meet the applicable requirements. Further shown are the composition limits and laboratory test results. Documentation verifying conformance to these requirements is on file and available for review.

UNIVERSAL ALLOY CORPORATION
180 Lamar Haley Parkway
Canton, GA 30114


Angie White Metallurgical Lab Manager
QUALITY ASSURANCE DEPARTMENT



Lab Approval



805648T04

COUNTRY OF MELT & MANUFACTURE - U.S.A.
Rev. 04/18/2016

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: 64761611E
DATE: 19/01/10

PO / BATCH NO.: P0040757/S143861

MATERIAL CERT REC'D: Yes
QUANTITY RECEIVED: 264ft
QUANTITY INSPECTED: 264ft
QUANTITY REJECTED: 0

THICKNESS ORDERED: 3.89"
THICKNESS RECEIVED: 3.9475"
SHEET SIZE ORDERED: —
SHEET SIZE RECEIVED: —

DESCRIPTION	NCR (Check Y/N)	COMMENTS
SURFACE DAMAGE	Y (N)	
CORRECT FINISH	(Y) N	
CORROSION	Y (N)	
CORRECT GRAIN DIRECTION	(Y) N	
CORRECT MATERIAL PER M-DRAWING	Y N	AMS QQ-A-200/11 acceptable as per attach email.
CORRECT THICKNESS	Y N	
PHOTO REQUIRED	Y (N)	
CORRECT REF # TO LINK CERT	(Y) N	P0040757
CORRECT MATERIAL IDENTIFICATION	(Y) N	
CORRECT M# ON THE MATERIAL	(Y) N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y (N)	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y (N)	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
	HRC	HRB	DUR A	DUR D	WEBSTER
TYPE OF MATERIAL					
SIZE OF TEST SAMPLE					
HARDNESS / DUROMETER READING					

testers located in the Quality Office

QC 18 INSPECTION	ENGINEERING SIGNOFF (if required)
INSPECTED BY: <u>61</u> <u>280</u>	SIGNED OFF BY: _____
DATE: <u>19/01/10</u>	DATE: _____

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

MATERIAL RECEIPT INSPECTION FORM

INSTRUCTIONS FOR INSPECTING BAR, TUBING, ROUND, & SHEET STOCK

- 1- VERIFY STOCK TO DART PURCHASE ORDER REQUIREMENTS
- 2- MEASURE ALL DIMENSIONS FOR EACH PURCHASED STOCK
 - a. WIDTH, THICKNESS, DIAMETER, WALL THICKNESS & LENGTH
- 3- VERIFY CONDITION OF MATERIAL i.e. DAMAGED, CORRODED, etc.
- 4- VERIFY THAT SUPPLIER HAS A NUMBER (HEAT #) ON ITS RECEIVING REPORT TO LINK TO MATERIAL CERTS
- 5- VERIFY MATERIAL CERTS ARE CORRECT TO THE DART RELEASED M-DRAWING
- 6- USING PORTABLE HARDNESS TESTER VERIFY HARDNESS OF THE MATERIAL TO THE DRAWING & RECORD

note Aluminum material only

INSTRUCTIONS FOR INSPECTING SKIDTUBE & STEP EXTRUSION

- 1- VERIFY TO DART SUPPLIED DRAWING
- 2- SAMPLE INSPECT MATERIAL IN BUNDLE TO ENSURE MATERIAL CAN BE RECEIVED INTO DART
- 3- USING PORTABLE HARDNESS TESTER VERIFY HARDNESS OF THE MATERIAL TO THE DRAWING
- 4- VERIFY THAT MATERIAL CERTS MATCH TO WHATS CALLED UP ON THE DART DRAWING

AFTER MATERIAL PASSES INSPECTION

- 5- HAVE DART EMPLOYEES START STOCKING MATERIAL BUT REQUEST MIN **20pcs** FOR FULL INSPECTION
- 6- INSPECT ALL DIMS AS PER DRAWING REQUIREMENTS

INSTRUCTIONS FOR INSPECTING CROSS TUBE MATERIAL

- 1- VERIFY MATERIAL CERTS MATCH THE REQUIREMENTS ON THE DART DRAWINGS
- 2- INSPECT MIN. HALF THE BATCH OF EXTRUSION RECEIVED INTO DART
- 3- INSPECT MATERIAL AS PER THE EXTRUSION REPORT
 - a. WALL THICKNESS USING ULTRA-SONIC IN 4 LOCATIONS
 - b. OUTSIDE DIAMETER HIGHEST/LOWEST BOTH ENDS
 - c. INSIDE DIAMETER HIGHEST/LOWEST BOTH ENDS
 - d. STRAIGHTNESS @ CENTER OVER 12" SPAN
 - e. WALL THICKNESS USING TUBE MICROMETER HIGHEST/LOWEST BOTH ENDS
- 4- IDENTIFY EACH TUBE IN SEQUENCE OF INSPECTING (TUBE 1, TUBE2.....) AND W/O# AND PO#
- 5- RECORD ALL FINDINGS ON EXTRUSION REPORT

IF ANY QUESTIONS PLEASE SEE QC COORDINATOR BEFORE GOING FURTHER

Patrick Duval

From: Pablo Bravo
Sent: Wednesday, November 07, 2018 3:36 PM
To: Chantal Lavoie
Cc: Linda Lacelle; Patrick Duval; Robert Aboud
Subject: RE: mat'l spec's

Chantal,

You can use the 200/11.

PABLO BRAVO

Director of Engineering – San Diego

DART AEROSPACE

T 1 760 724-5300 > 106

O 1 760 509-1606

F 1 760 509-1562

1 800 556- 4166

www.dartaerospace.com

From: Chantal Lavoie
Sent: Wednesday, November 7, 2018 6:30 AM
To: Pablo Bravo <pbravo@dartaero.com>
Cc: Linda Lacelle <llacelle@dartaero.com>; Patrick Duval <pduval@dartaero.com>; Robert Aboud <raboud@dartaero.com>
Subject: mat'l spec's

Good morning Pablo,
Will need your help on the following dwg. I have place an order for 647.3915 on the dwg it's asking for AMS-QQ-A-250/12 but rec'd AMS-QQ-A-200/11.
Please advise if this would be acceptable.
Thanks
Chantal

Chantal Lavoie

Purchasing Coordinator

DART AEROSPACE

T 1 613 632-5200

F 1 613 632-1053

E clavoie@dartaero.com

1 800 556- 4166

www.dartaerospace.com

